



## Petasis-type reactions for the synthesis of substituted pyrrolidin-2-ones

Wu, Peng; Clausen, Mads Hartvig; Nielsen, Thomas Eiland

*Published in:*  
ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY

*Publication date:*  
2014

*Document Version*  
Early version, also known as pre-print

[Link back to DTU Orbit](#)

*Citation (APA):*  
Wu, P., Clausen, M. H., & Nielsen, T. E. (2014). Petasis-type reactions for the synthesis of substituted pyrrolidin-2-ones. *ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY*.

---

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

## Petasis-Type Reactions for the Synthesis of Substituted Pyrrolidin-2-ones

Peng Wu, Mads H. Clausen\* and Thomas E. Nielsen\*

mhc@kemi.dtu.dk, ten@kemi.dtu.dk

Department of Chemistry, Technical University of Denmark, DK-2800 Kgs. Lyngby, Denmark

Pyrrolidin-2-ones are important heterocyclic motifs found in natural products and biologically active synthetic molecules. Addition of nucleophiles, including allylsilanes, isonitriles and organometallics, to *N*-acyliminium ions represents one of the most commonly used approaches for the formation of substituted pyrrolidin-2-ones. Only few studies on the nucleophilic addition of organoboronic acids to *N*-acyliminium ions have been reported. Herein, we disclose our recent efforts for the synthesis of substituted pyrrolidin-2-ones through Lewis-acid-mediated Petasis-type reactions. By implementing a reductive cyclization reaction, linear L-malic acid derivatives were rapidly converted into cyclic *N*-acyliminium ions. Under the optimized conditions, entailing the use of HFIP as solvent, both electron-rich and electron-deficient boronic acids were successfully added to a range of cyclic *N*-acyliminium ions, typically with excellent diastereoselectivity with electron-deficient boronic acids.